

## **5.12 NOISE**

### **5.12.1 Affected Environment**

The MPP is located at 164 Magnolia Boulevard in the COB, California. The MPP will provide approximately 250 MW nominally and up to 328 MW during peak demand. The site is on the property of the existing COB power generating facility. The site is located 500 feet southwest of Interstate 5 (I-5) and approximately 2.5 miles southeast of Burbank/Glendale/Pasadena Airport. The property is approximately 23 acres in size. The new plant facilities will be constructed on approximately three acres. The topography of the area is generally flat.

The property is bordered by a Metrolink station and an industrial property to the northeast, a car dealership to the southeast, industrial properties to the southwest, and industrial /commercial properties to the northwest. Land use in the vicinity of the site is comprised of a variety of industrial, commercial and residential properties. The nearest residences are located in an industrial zone 600 feet west of the acoustical center of the proposed MPP in the COB. The nearest residential zone is located to the southwest of the MPP site, approximately 1,300 feet from the acoustical center of the proposed project site. These residences are acoustically shielded from the project by intervening buildings. The only visible equipment will be the exhaust stack, which will have a height of 150 feet above grade. The nearest recreational land use, George Izay Park, is located approximately 2,300 feet southeast of the project area, across the street from the Walt Disney Elementary School.

The MPP is the addition of one F-frame-type gas turbine and HRSG located adjacent to the existing COB power generating facility. Some existing structures will be removed during construction. No new offsite linear routes for transmission lines or pipelines will be constructed as part of this project.

#### **5.12.1.1 Acoustical Definitions**

Sound levels are measured on a logarithmic scale in decibels, dB. The universal measure for environmental sound is the “A”-weighted sound level, dBA. “A” scale weighting is a “filter” or adjustment curve applied by the measuring instrument to shape the frequency content of the sound in a manner similar to the way the human ear responds to sounds. “Noise” is defined as unwanted sound.

The residual environmental noise level is the quasi-static noise level that exists in the absence of all identifiable, sporadic, individual noise events such as those caused by automobile pass-bys, aircraft overflights, intermittent dog barking, etc. In most environments this residual level is called the ambient or background noise level and is composed of the cumulative sum of all noise sources, both near and far. It includes indistinguishable noise from road

transportation, fixed and mobile machinery, aircraft, and other sources. The ambient level varies slowly with time as these sources increase or diminish.

Because environmental noise, by its nature, varies with time, it is beneficial to define certain measurement terms that are used to characterize this fluctuating quantity. The true energy average level over a specific time period is defined as the equivalent level, abbreviated as  $L_{eq}$ .  $L_{eq}$  is the level over an interval that is equivalent to a perfectly constant level containing the same acoustic energy over the same interval. Hence,  $L_{eq}$  provides a measure of the true energy average sound level in an area and includes all sporadic or transient events.  $L_{eq}$  is the primary noise descriptor used in the COB's Noise Ordinance statute as it applies to this project. The (measurable) statistical sound level quantity,  $L_{90}$  (in dBA) also represents the background sound level.  $L_{90}$  is the level that is exceeded 90 percent of the time during a given interval. Likewise,  $L_{50}$  is the sound level that is exceeded 50 percent of the time during a given interval.

Other descriptors of noise are also commonly used to help predict an average community reaction to adverse effects of environmental noise, including traffic-generated and industrial noise. These descriptors include the Day-Night Average Noise Level ( $L_{dn}$ ), and the Community Noise Equivalent Level (CNEL). Each of these descriptors uses units of dBA. Both  $L_{dn}$  and CNEL noise metrics represent 24-hour periods and both apply a time-weighted factor designed to penalize noise events that occur during evening and nighttime hours, when relaxation and sleep disturbance is of more concern. In the case of CNEL, noise occurring during the daytime hours, between 7:00 a.m. and 7:00 p.m., receives no penalty. Noise occurring between 7:00 p.m. and 10:00 p.m. is penalized by adding five dB to the measured noise level, while noise occurring from 10:00 p.m. to 7:00 a.m. is penalized by adding 10 dB to the measured level.  $L_{dn}$  differs from CNEL by not adding the penalty between 7:00 p.m. and 10:00 p.m. Both CNEL and  $L_{dn}$  are the predominant metrics used by local governments to describe noise environments within their jurisdictions and also for planning purposes. The COB uses the CNEL and  $L_{dn}$  descriptors interchangeably throughout their General Plan Noise Element.

#### **5.12.1.2 Ambient Noise Survey**

In order to evaluate current conditions and assess potential project noise impacts on the surrounding community, ambient sound level surveys were conducted on February 6 and 7, 2001. The noise survey was conducted near the property lines of the plant site and at selected offsite locations. These offsite locations represent the nearest noise-sensitive receptors (consisting of residential, recreational and schools) to the proposed site.

Unattended long-term (25 hours in duration) and attended short-term (generally 10 minutes in duration) noise measurements were conducted. The long-term measurements were made

with Type 2, Metrosonics db308 community noise analyzers. The short-term measurements were made with a tripod-mounted Type 1 Brüel & Kjær Type 2231 sound level meter (SLM) with statistical analyzer. The sound measuring instruments used for the survey were set on Slow time response using the A-weighted decibel (dBA) scale for all of the noise measurements. To ensure accuracy, the laboratory calibration of the instruments was field checked before and after each measurement period using an acoustical calibrator. The accuracy of the acoustical calibrator is maintained through a program established by the manufacturer, and is traceable to the National Institute of Standards and Technology. The sound measurement instruments meet the requirements of the American National Standard S 1.4-1983 and the International Electrotechnical Commission Publications 804 and 651. In all cases, the microphone height was five feet above the ground and the microphone was equipped with a windscreen.

The results of the noise measurements taken on February 6 and 7 are summarized below. Two long-term noise measurements were conducted. The first monitoring location designated Long-Term 1 (LT-1) was located adjacent to 421 N. Moss Street, which is a residence in an industrially zoned area. The other monitoring location, designated Long-Term 2 (LT-2), was located behind Glenwood Place along the alleyway adjacent to the single family residential area. Noise at LT-1 and LT-2 was dominated during the daytime hours by noise from traffic, commercial activity and industrial facilities. The noise measurements at LT-1 also included barking dogs from the adjacent residence and nearby dog kennel. The hourly daytime noise levels at LT-1 varied from 53 dBA  $L_{eq}$  to 63 dBA  $L_{eq}$  (49 dBA  $L_{90}$  to 60 dBA  $L_{90}$ ). Nighttime hourly noise levels at LT-1 varied from 49 dBA  $L_{eq}$  to 60 dBA  $L_{eq}$  (45 dBA  $L_{90}$  to 58 dBA  $L_{90}$ ). LT-2 was representative of the nearest residential area to the southwest of the project site. Daytime hourly noise levels at LT-2 varied from 51 dBA  $L_{eq}$  to 70 dBA  $L_{eq}$  (46 dBA  $L_{90}$  to 57 dBA  $L_{90}$ ). Nighttime hourly noise levels at LT-2 varied from 46 dBA  $L_{eq}$  to 57 dBA  $L_{eq}$  (42 dBA  $L_{90}$  to 53 dBA  $L_{90}$ ). The long-term noise measurement data are summarized in Table 5.12-1.

TABLE 5.12-1

## LONG-TERM NOISE MEASUREMENT DATA SUMMARY

Site ID	Measurement Date	Location	Zone	25 hr $L_{eq}$ (dBA)	24 hr $L_{dn}$ (dBA)	24 hr CNEL (dBA)	25 hr Average $L_{50}$ (dBA)	25 hr Average $L_{90}$ (dBA)
LT-1	2/6/01 -2/7/01	425 N. Moss St.	M-2	59	63	64	57	55
LT-2	2/6/01 -2/7/01	Behind Glenwood Place	R	60	62	63	54	52

Six short-term noise measurements (ST-1 through ST-6) were conducted concurrently with the long-term noise measurements. The short-term noise measurement data for the February 6 and 7 noise measurements are summarized in Table 5.12-2. ST-3, ST-4, and ST-5, and were conducted at representative locations along the northeast, southwest and northwest boundaries of the MPP property respectively, while the remaining short-term noise measurements were conducted at selected locations in the surrounding community. The noise measurement locations, short-term and long-term, are shown on Figure 5.12-1. With the exception of ST-4, the existing MPP operations were not a predominant source of noise (and generally were not audible) at offsite representative noise-sensitive locations. At location ST-4 (on the sidewalk, directly across from operating unit), the ambient noise level was found to be 67 dBA  $L_{eq}$  (65 dBA  $L_{90}$ ), with the noise from the power plant dominating the noise environment. At other offsite locations, ambient noise levels varied from 59 dBA  $L_{eq}$  (50 dBA  $L_{90}$ ) at a residence on Tujunga Avenue, to 71 dBA  $L_{eq}$  (70 dBA  $L_{90}$ ) across from the Holiday Inn Suites at Angelino and First Streets. Typical ambient noise sources at offsite locations included vehicular traffic, industrial facilities, aircraft noise, distant landscaping equipment noise, and children playing.

Weather conditions during the survey period were mild with generally clear skies. Air temperatures varied from 68° F to 69° F, with 45 percent to 53 percent relative humidity. Winds varied from 1 to 10 miles per hour, generally from the south to southwest.

#### **5.12.1.3 Recommended A-Weighted Sound Level Design Goals**

The MPP is sited within the COB. The Noise Element and Noise Ordinance of the COB have been reviewed and the portions relevant to this project are summarized in Section 5.12.4, Laws, Ordinances and Regulations Compliance.

Several categories of noise receptors are found near the proposed project site: industrial and commercial usage, which abuts the proposed site on all sides; legal, non-conforming residential land uses in the industrial area to the northwest side; and residential land uses to the southwest of the project site. The nearest legal, non-conforming residential land use is located 600 feet west of the acoustical center of the project site. The nearest conforming residential land use is located 1,300 feet southwest of the acoustical center of the project site. The nearest recreational land use (local park and elementary school) is located approximately 2,300 feet southwest of the project's acoustical center.

The CEC regulations regarding noise, new-source noise impacts at residential/recreational receptors are evaluated with respect to the increase over pre-existing background noise levels. The CEC defines the area potentially impacted by the project as that area where there will be an increase above existing ambient noise levels of five dBA or more during either construction or operation.

**TABLE 5.12-2**  
**SHORT-TERM NOISE MEASUREMENT DATA SUMMARY**  
**(February 6, 2001)**

Site ID	Measurement Location	Date	Measurement Period			Measurement Results, dBA					
			Start Time	Duration (minutes)	Predominant Noise Source	L <sub>eq</sub>	L <sub>max</sub>	L <sub>min</sub>	L <sub>90</sub>	L <sub>50</sub>	L <sub>10</sub>
ST-1	City Park, Clark Ave.	2/6/01	12:35	15	Traffic, children playing, distant landscaping	61	70	53	56	60	64
ST-2	226 Tujunga Ave.	2/6/01	13:05	2	Leaf blower, traffic	66	72	58	59	65	69
ST-2a	226 Tujunga Ave.	2/6/01	13:18	10	Traffic, car alarm chirps, distant P.A. system	59	77	48	50	52	61
ST-3	East side of plant, adjacent to flood channel	2/6/01	13:40	10	Traffic, water discharge into channel	66	69	63	64	66	67
ST-4	Back of sidewalk, west side of plant	2/6/01	13:55	10	Power plant, traffic, overhead aircraft	67	75	64	65	66	69
ST-5	Magnolia overcrossing across from Varney St.	2/6/01	14:15	10	Traffic	69	82	59	62	67	71
ST-6	Near Holiday Inn Suites	2/6/01	14:38	2	Traffic	71	81	69	70	70	72

The COB's Noise Element of the General Plan recommends that exterior noise exposures at residential locations should not exceed an  $L_{dn}$  of 60 dBA. The existing  $L_{dn}$  noise exposure levels at LT-1 and LT-2, the closest residential use areas to the project site, are 63 dBA and 62 dBA respectively. Areas where the  $L_{dn}$  is between 60 dBA and 70 dBA are considered conditionally acceptable for residential properties. This means that any new construction or development of residential properties in these areas must include sufficient noise insulation features to meet the acceptable interior noise exposure level of 45 dBA  $L_{dn}$ .

The COB's Noise Ordinance permits an increase of up to five decibels above ambient noise base levels for land uses located in residential (and, by extension, recreational), commercial and other zones. The base levels are as follows:

Base Levels	Time	Zone
45 dBA	Nighttime	Residential
55 dBA	Daytime	Residential
65 dBA	Anytime	Commercial
70 dBA	Anytime	All other zones

Daytime is defined as the hours from 7:00 a.m. to 10:00 p.m. and nighttime is defined as the hours from 10:00 p.m. to 7:00 a.m. The MPP must comply with the base level at adjacent land uses even if the existing ambient noise level is higher than the prescriptive limits. The COB Noise Ordinance is structured such that the "ambient" noise level is represented by  $L_{eq}$ .

During the February 6-7 noise measurements the lowest of the hourly ambient noise levels as measured at LT-1, the nearest residence to the project site, was 49 dBA  $L_{eq}$ . Thus, the CEC impact criteria would be 54 dBA (49 dBA  $L_{eq}$  plus five dBA) at the nearest residence, approximately 600 feet west of the project's nominal acoustical center. At LT-2, the nearest residential zone to the project site, the lowest measured hourly noise level was 46 dBA  $L_{eq}$ . Thus, the CEC impact criteria would be 49 dBA at this location. The COB's maximum permissible noise level with the proposed MPP in operation would be 50 dBA  $L_{eq}$  (45 dBA  $L_{eq}$  plus five dBA) at residential land uses. This is for nighttime hours, the most stringent noise standard. In order for the project not to exceed the COB standard, the noise level from the project at the nearest residence would need to be no louder than 48 dBA  $L_{eq}$ . A contribution of 48 dBA  $L_{eq}$  from the power plant added to the nighttime ambient noise base level of 45 dBA  $L_{eq}$  at a residential land use leads to the maximum increase of five dBA.

The nearest commercial land use is located approximately 325 feet northwest of the project's nominal acoustical center. In order to comply with the COB's noise ordinance, the noise level from the project cannot exceed 68 dBA  $L_{eq}$  at the commercial property. The nearest industrial land use is approximately 100 feet to the northeast of the power plant property line, which is approximately 250 feet from the nominal acoustical center of the project. To comply

with the noise ordinance, the maximum permissible noise level from the project at an industrial land use is 73 dBA  $L_{eq}$ .

Thus, the most stringent applicable noise criteria is that for residential land use from the COB's Noise Ordinance. The A-weighted design goal is a maximum permissible noise level from the proposed project of 48 dBA at the nearest residential land use, approximately 600 feet west of the project's nominal acoustical center.

#### **5.12.1.4 Noise Prediction Modeling of Operational Noise**

The preliminary plant design, including a complete listing of major plant equipment and its associated noise level rating, was provided by the project engineers (Black and Veatch) as the basis for this noise impact evaluation. The equipment listing with maximum sound pressure levels at various distances is presented in Table 5.12-3. Black and Veatch supplied URS with the octave band sound power levels (PWLs) of the major subcomponents. The PWLs were used to calculate the corresponding sound pressure levels (SPLs) for the equipment. Multiples of the same equipment type were accounted for and added together to estimate the total sound pressure for all of the equipment currently planned to be used on the site. The spectral PWL data for the major equipment and the resultant calculations are contained in Appendix N. The formula used to derive the sound pressure levels (in dBA) is as follows:

$$SPL = PWL - 10 \log(2\pi r^2) \text{ dBA}$$

Where: r is in meters.

The predicted far field noise levels, in dBA, were then calculated. Additional propagation losses affecting the sound level due to distance and air absorption were conservatively considered and subtracted based upon recognized standards. Barrier effects of existing structures between the plant site and receiver locations were included in the predictions where appropriate.

Based upon the proposed project's noise contribution, the noise-sensitive receptors where there would be a potential increase of 5 dBA or more over existing background levels were identified. These areas are shown on Figure 5.12-2.

**TABLE 5.12-3**  
**ESTIMATED SOUND PRESSURE LEVELS (SPL, dBA)**  
**FOR MAJOR EQUIPMENT AT BURBANK MAGNOLIA POWER PROJECT<sup>1</sup>**

Quantity	Description	SPL (dBA) <sup>2</sup>
1	Combustion Gas Turbine and Generator	65 dBA @ 400 feet
1	Heat Recovery Steam Generator (HRSG)	65 dBA @ 400 feet
2	HP/IP Boiler Feedwater Pumps	90 dBA @ 3 feet
1	Closed Cycle Cooling Water Pumps	90 dBA @ 3 feet
1	Condensate Pumps	90 dBA @ 3 feet
1	Steam Turbine and Generator	65 dBA @ 400 feet
6	Cooling Tower Cell	65 dBA @ 400 feet
1	Gas Compressor	90 dBA @ 3 feet
1	Step-up Transformers	85 dBA @ 1 foot

<sup>1</sup> Source: Black & Veatch.

<sup>2</sup> SPLs represent maximum A-weighted sound pressure levels (ref: 20 microPa) per unit.

## 5.12.2 Environmental Consequences

### 5.12.2.1 Power Plant Site

#### Construction Phase Noise.

The construction phase of the plant, from site preparation and grading to commercial operation, is scheduled to last approximately 23 months commencing early 2002. During that time many activities will be taking place, including construction of foundations, installation of major piping and equipment, connection of major site interfaces, erection of major structures, and startup/testing. During these activities a varying number of pieces of construction equipment and personnel will be on site, resulting in varying levels of construction noise. The construction and startup schedule is based on a single-shift work schedule, six-day, 10-hours/day, work week. Overtime and double shift work may also be used.

Construction is planned to typically take place between 7 a.m. and 7 p.m., Monday through Saturday. During the startup phase, some activities may be performed 24 hours per day, seven days per week.



**Demolition.** Demolition will include the removal of Magnolia Units 1 and 2, the associated cooling towers and aboveground and underground fuel storage facilities. Demolition and removal activities are expected to begin in early 2002 and take approximately four to six months to complete. An extensive field study was conducted by Bolt Beranek and Newman on various types of construction projects including industrial projects. These study data were used to develop Table 5.12-4. The average noise level from demolition activities, as shown in Table 5.12-4, is 84 dBA at 50 feet. Accounting for attenuation of sound by distance and existing shielding from buildings, the equipment noise will be reduced to 57 dBA at 600 feet. These noise levels will be approximately six decibels lower to four decibels higher than the measured daytime ambient noise levels measured at LT-1, the nearest residence. At nighttime the noise level of the demolition will be approximately three decibels lower to 13 decibels higher than the measured ambient noise levels at the nearest residence.

**Construction.** Table 5.12-4 contains a list of typical ranges of noise levels for the construction activities anticipated for this project. As Table 5.12-4 shows, the loudest phase of the construction effort is expected to occur during finishing. The average noise level during finishing, with all pertinent equipment operating, is estimated to be approximately 89 dBA at a distance of 50 feet. Accounting for the attenuation of sound with distance and existing shielding from buildings, the equipment noise will be reduced to a noise level of approximately 62 dBA at a distance of 600 feet from the construction activity. These noise levels will be approximately one decibel lower to nine decibels higher than the measured daytime ambient noise levels measured at LT-1, and approximately 13 decibels above the lowest hourly nighttime ambient noise level. Thus, pursuant to the CEC standard, the nearest residence to the western project boundary will be impacted by the project (increase of five dBA or more) during construction. At the nearest commercial land use at a distance of 200 feet from the construction activity, the construction equipment noise will be approximately 77 dBA. This noise level is approximately eight decibels above the daytime ambient noise level in the area as measured at ST-5. Thus, this area will also be impacted by the project during construction activities.

Based upon the construction noise data, noise levels on the construction site could exceed federal Occupational Safety and Health Act (OSHA) and California Occupational Safety and Health Association (Cal/OSHA) guidelines for worker noise exposure. Compliance with Cal/OSHA regulations will ensure that construction personnel are adequately protected from potential noise hazards. The noise exposure level to protect hearing of workers is regulated at 90 dBA over an eight-hour work shift. Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. The project owners will implement a hearing conservation program for applicable employees as outlined in Cal/OSHA regulations.

**TABLE 5.12-4**  
**TYPICAL NOISE LEVELS FROM**  
**CONSTRUCTION ACTIVITIES FOR INDUSTRIAL PROJECTS**

<b>Construction Activity</b>	<b>Average Sound Level at 50 feet (dBA) <sup>1</sup></b>	<b>Variation (dB)</b>	<b>Average Sound Level at 50 feet (dBA) <sup>2</sup></b>	<b>Variation (dB)</b>
Demolition Activities	84	9	83	16
Foundations	77	4	77	5
Erection of Major Components	84	9	84	7
Finishing	89	7	89	10

Source: Bolt, Beranek and Newman (Prepared under contract for the U.S. Environmental Protection Agency), Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, December 31, 1971.

<sup>1</sup> Sound level with all pertinent equipment operating.

<sup>2</sup> Sound level with the minimum required equipment operating.

Section 21-209 of the COB's Noise Ordinance relates to noise from construction activities in a residential zone of the city or within a radius of 500 feet from any residential zone. It states that no construction activities are allowed to take place between the hours of 10:00 p.m. and 7:00 a.m., in such a manner that a reasonable person of normal sensitiveness residing in the residential zone is caused discomfort or annoyance. Due to the close proximity of residential receptors to the project site, construction should be limited to the daytime hours (7 a.m. to 10 p.m.). For construction activities that occur outside daytime hours it will be necessary to obtain a permit from the COB.

**Offsite Laydown and Parking Areas.** Areas within the site boundary will be used as off-load and staging areas. There will also be three offsite locations used for laydown space and parking. The three sites are located adjacent, or very close, to southbound I-5 and the railway line, to the north of the project site. Thus, all three sites are in areas with high noise levels and the use of these sites for equipment laydown and parking will not impact the surrounding area with respect to noise.

**Construction Traffic.** Access to the plant will be via the existing site gate on Magnolia Boulevard and Olive Avenue. Evaluation of the construction traffic did not find an impact on the surrounding area due to noise. The existing traffic and surrounding roadway infrastructure is such that the noise from the construction traffic will not impact sensitive receptors.

**Steam Blows.** Steam blows are typically the loudest noise inherent in the construction of projects incorporating a steam turbine. After erection and assembly of the feedwater and steam systems, the piping and tubing that comprise the steam path have accumulated dirt, rust, scale and construction debris such as weld splatter, welding rods, etc. To thoroughly clean the system, the steam line is temporarily routed to the atmosphere, effectively flushing out the lines. This procedure, referred to as steam blow, is typically conducted in short bursts, lasting two to three minutes each, several times daily over a period of two to three weeks. At the end of this procedure the steam line is connected to the steam turbine and the system is ready for operation.

Steam blows can produce noise levels as high as 130 dBA at a distance of 100 feet; this noise level will attenuate to approximately 114 dBA at the nearest residential receptors. A noise level of 114 dBA, although brief, will cause a startle effect and be very disruptive. Steam piping can be equipped with temporary silencers, which can reduce noise levels to approximately 110 dBA at 100 feet, or approximately 94 dBA at the nearest residence. Alternatively, a newer quieter steam blow process could be used, variously referred to as QuietBlow<sup>®</sup> or Silentsteam<sup>™</sup>. This method uses lower pressure steam over a continuous period of approximately 36 hours. Resulting noise levels reach approximately 80 dBA at 100 feet, or approximately 64 dBA at the nearest residence. This noise level will be approximately equivalent to the loudest ambient noise level measured in the vicinity of the nearest residence. Thus, even using this method the noise level will probably be just at the limit of the CEC criteria and will exceed the COB criteria.

**Operations Phase Noise.** The noise impact calculations indicate that without noise mitigation measures, the operations noise from the proposed power plant will be approximately 62 dBA at the nearest residence. This level is 14 dBA above the maximum allowable noise level of 48 dBA. At the nearest residential zone, 1,300 feet to the southwest, the proposed power plant noise level is predicted to be 50 dBA, a level two dBA above the City regulation. The predicted noise level at the nearest commercial land use, on the plant's northwest boundary is 71 dBA. This noise level is three dBA above the maximum allowable noise level of 68 dBA. The predicted noise level at the nearest industrial land use, to the northeast of the project boundary, is 75 dBA. This noise level is two dBA above the maximum allowable noise level of 73 dBA. The proposed project, without mitigation measures, will cause an increase in the ambient noise base levels of greater than five decibels at the nearest commercial, industrial and residential land uses. Thus, the project will exceed the COB noise ordinance standards. Without mitigation measures the proposed project will also exceed the CEC's noise impact criteria at the nearest legal, non-conforming residential land use by 10 dBA and at the nearest conforming residential land use by 1 dBA.

Some potential mitigation measures are listed in Table 5.12-5. With these measures, the noise levels from operation of the MPP will be lowered sufficiently to be below the CEC's noise

impact criteria and the COB Noise Ordinance standards. While the mitigation measures may be technically feasible, the cost of these measures may not be reasonable. With incorporation of the limited mitigation measures listed in Table 5.12-6, the noise levels from operation of the MPP will comply with the COB and CEC noise criteria only if there were no legal, non-conforming residential properties within the industrially zoned area. The noise level at the nearest non-conforming residential land use with the mitigation measures outlined in Table 5.12-6 is predicted to be 60 dBA. Presented in Figure 5.12-2 is the area containing noise-sensitive receptors where there will be a potential increase of 5 dBA or more over existing background noise levels when the mitigation measures listed in Table 5.12-6 are incorporated into the project.

Based upon the noise level data, noise levels inside and near the MPP will be similar in magnitude to comparably sized power plants and other large industrial projects. These high noise levels could exceed federal Occupational Safety and Health Act (OSHA) and California Occupational Safety and Health Association (Cal/OSHA) guidelines for worker noise exposure. Compliance with Cal/OSHA regulations will ensure that personnel are adequately protected from potential noise hazards. The noise exposure level to protect hearing of workers is regulated at 90 dBA over an eight-hour work shift. Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. The project owners will implement a hearing conservation program for applicable employees as outlined in Cal/OSHA regulations.

#### **5.12.2.2 Cumulative Noise Impacts**

Based upon a review of anticipated projects in the area, the nearest approved project is the Burbank Entertainment Village. It will be located 0.2 miles from the project site on the north side of I-5 at the intersection of Magnolia Boulevard and 1<sup>st</sup> Street. In fact, all of the approved projects within a one-mile radius of the site are north of I-5 or very close to I-5 on the southbound side. On the north side of I-5, the MPP will not be audible. Thus, no cumulative noise impacts related to construction or operations are anticipated.

### **5.12.3 Mitigation Measures**

#### **5.12.3.1 Power Plant Site**

##### **Power Plant Demolition and Construction.**

**Noise-1:** The construction contractor shall comply with all federal, state and local regulations on truck and construction equipment noise. The contractor shall ensure the use of functioning

TABLE 5.12-5

**ANTICIPATED NOISE MITIGATION MEASURES, UNMITIGATED AND MITIGATED SOUND  
PRESSURE LEVELS AT 400-FOOT DISTANCE (dBA)**

	<b>Standard Packaged Equipment<sup>1</sup> (dBA)</b>	<b>Anticipated Mitigation Measures (or Equivalent)</b>	<b>Mitigated Noise Level<sup>2</sup> (dBA)</b>
HRSG Exhaust Stack	60	Stack silencer.	48
Combustion Turbine Generator (includes CT Inlet, CT Compartment, Generator Compartment, Exhaust Duct and all auxiliary components included in the scope-of-supply)	65	Building enclosing the CT Generator which must provide 30 dBA attenuation.	35
HRSG Transition Ductwork	61	Enclosed in a building that must provide 30 dBA attenuation.	31
HRSG Boiler Section	57	Increase boiler wall thickness/ noise barrier.	49
Standard Generator Step-up Transformer	55	Enclosed in a building that must provide 30 dBA attenuation.	25
Steam Turbine Generator, in building with 5% opening (includes ST Package, Generator Package and all auxiliary components included in the scope-of-supply)	52	The building enclosing the ST Generator must provide 30 dBA attenuation.	35
Boiler Feed Pumps	62	Enclosure around pumps.	44
Gas Compressor (Currently designed to be in building with 5% opening)	58	The building enclosing the gas compressors must provide 20 dBA attenuation.	51
Cooling Tower	64	Change fans and build a noise barrier and splash guard to reduce noise from water fall.	49

<sup>1</sup> SPL at 400 feet, based upon sound power data for “standard” package. Standard packaged equipment includes noise mitigation options typically available with equipment at no additional cost.

<sup>2</sup> The not-to-exceed noise level of each component at a nominal distance of 400 feet.

exhaust mufflers and engine silencers on all engine-driven equipment, and avoid unnecessary equipment idling for long periods.

**Noise-2:** Construction equipment staging, parking and maintenance areas and material stockpile areas shall be located as far from noise-sensitive boundaries as possible. When practicable, noise reducing enclosures or temporary barriers shall be utilized to shield noise from noise-sensitive boundaries.

**Noise-3:** Hours of construction and startup, including maintenance activities and all spoils and material transport, shall be restricted to the times and days permitted by local noise or other applicable ordinances, or as allowed by COB noise permit.

**Noise-4:** Areas above 85 dBA shall be posted as high noise level areas and hearing protection shall be required. A hearing conservation program shall be implemented as outlined in Cal/OSHA regulations.

**Noise-5:** The use of noise-producing signals, including horns, whistles, alarms and bells, will be for safety warning purposes only.

**Noise-6:** No construction-related public address loudspeaker, two-way radio or music system shall be audible at any adjacent noise-sensitive land use.

**Noise-7:** The construction contractor shall implement a noise awareness program for construction workers and a noise complaint process for the surrounding community. The onsite construction supervisor shall have the responsibility and authority to receive and resolve noise complaints.

### **Steam Blows.**

**Noise-8:** QuietBlow<sup>®</sup>, Silentsteam<sup>™</sup> or equivalent steam blow processes shall be utilized to reduce noise levels from steam blows. A public notification program will be instituted to alert area residents as the nature of the activity, expected sound levels and the fact that the steam blow process is a one-time operation and not a part of normal plant operations.

### **Power Plant Operations.**

Without mitigation, noise levels from the MPP will exceed CEC and local noise standards. However, with incorporation of the following mitigation measures or their equivalent, noise levels from the project will be below CEC and local noise standards. Figure 5.12-2 presents the predicted noise contours from the MPP with mitigation measures. Onsite noise levels in

and near the proposed power units will require normal industrial occupational safety measures relating to noise.

**Noise-9:** The mitigation measures shown in Table 5.12-5 represent a preliminary assessment of technically feasible measures which will provide the level of noise reduction necessary to meet the COB Noise Ordinance and the CEC criteria. Efforts are currently ongoing to obtain confirmation from equipment manufacturers and noise control vendors that the above mitigation measures and resultant noise levels are attainable, and to obtain estimates on the costs of these mitigation measures. If it is determined that the costs of mitigation to meet the sound level design goal at the nearest residential property are prohibitively high, alternative mitigation measures may be considered.

Alternatives to the mitigation measures listed in Table 5.12-5 may be developed as the final design progresses. The eventual Engineering Procurement Construction (EPC) Contractor may further optimize the acoustical budgeting based upon changes in equipment and/or plant configuration. Consequently, some of the measures listed above may eventually be determined to be unnecessary to attain the sound level design goals.

**Noise-9 (Option 1):** The proposed mitigation measures (or equivalent) shown in Table 5.12-6 will reduce the combined noise levels from the MPP to below CEC noise impact criteria and to meet the COB noise standards, assuming compatible non-residential uses only within the industrially zoned area.

**Noise-10:** Areas above 85 dBA shall be posted as high noise level areas and hearing protection shall be required. A hearing conservation program shall be implemented as outlined in Cal/OSHA regulations.

**Noise-11:** The use of noise-producing signals, including horns, whistles, alarms and bells, will be for safety warning purposes only.

**Noise-12:** No operations-related public address loudspeaker, two-way radio or music system shall be audible at any adjacent noise-sensitive land use.

### **5.12.3.2 Cumulative Noise Impacts**

No cumulative noise impacts from either construction or operations are anticipated as a result of the MPP. Consequently, no additional noise mitigation measures are required with respect to cumulative noise impacts from other projects.

**TABLE 5.12-6**  
**ANTICIPATED NOISE MITIGATION MEASURES,**  
**UNMITIGATED AND MITIGATED SOUND PRESSURE LEVELS AT 400-FOOT DISTANCE**  
**(dBA)**

	<b>Standard Packaged Equipment<sup>1</sup></b>	<b>Anticipated Mitigation Measures (or Equivalent)</b>	<b>Mitigated Noise Level<sup>2</sup></b>
HRSG Exhaust Stack	60	Stack silencer.	48
Combustion Turbine Compartment	62	Enclosure/ Barrier.	50
Combustion Turbine Generator Compartment	61	Enclosure/ Barrier.	49
Gas Compressor (In building)	58	The building enclosing the gas compressors must provide 20 dBA attenuation.	51

1 Based upon sound power data for “standard” package. Standard packaged equipment includes noise mitigation options typically available with equipment at no additional cost.

2 The not-to-exceed noise level of each component at a nominal distance of 400’.

#### **5.12.4 Laws, Ordinances and Regulations (LORS) Compliance**

The following sections summarize LORS compliance with respect to noise. The applicable LORS are also summarized in Table 5.12-7.

##### **5.12.4.1 Federal**

There are no federal LORS that affect this project with regard to noise issues. However, there are guidelines at the Federal level that direct the consideration of a broad range of noise and vibration issues as listed below:

- National Environmental Policy Act (42 USC 4321, et. seq.) (PL-91-190) (40 CFR Section 1506.5)
- Noise Control Act of 1972 (42 U.S.C. 4910).

Additional noise emission/exposure guidelines, regulations, codes, and statutes exist that are promulgated and/or enforced by various federal agencies including Health and Human Services that are focused on their respective areas of expertise such as worker noise exposure.



TABLE 5.12-7

## LAWS, ORDINANCES AND REGULATIONS (LORS) APPLICABLE TO NOISE

LORS	Applicability	Conformance (Section)
<b>Federal</b>		
EPA 1974 Noise Guidelines	Guidelines for State and Local Governments.	N/A
The Occupational Safety and Health Act of 1970 (OSHA), (29 CFR § 1919 et seq.).	Guidelines for exposure of workers to noise during construction and operations.	Sections 5.12.2.1 and 5.12.2.1.
Noise Control Act (1972) as amended by the Quiet Communities Act (1978); (42 USC 4901 – 4918)	Separate noise-sensitive areas are encouraged.	N/A
<b>State</b>		
Rules of Practice and Procedure & Power Plant Site Certification Regulations, CEC, 1997	Defines noise impacts at residential/recreational receptors in relation to an increase over pre-existing background noise levels.	Sections 5.12.1.3 and 5.12.2
Cal/OSHA Occupational Noise Exposure Regulations (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, § 5095, et seq.).	Sets employee noise exposure limits. Equivalent to Federal OSHA standards.	Sections 5.12.2.1 and 5.12.2.1.
Cal. Noise Control Act of 1973 (Cal. Health and Safety Code, Division 28).	Comply with local noise ordinances.	N/A
<b>Local</b>		
COB General Plan, VI Noise Element	One of the goals of the noise element is to encourage the reduction of noise from all sources such as motor vehicles, industrial/commercial activities and home appliances.	N/A
COB General Plan, VI Noise Element, Section VI, D and E.	Recommends that exterior noise exposures at residential locations should not exceed an $L_{dn}$ of 60 dBA. Interior noise levels attributable to exterior sources shall not exceed 45 dBA $L_{dn}$ .	Sections 5.12.1.3 and 5.12.2.
COB Noise Ordinance (Chapter 21, Environmental Protection, Article 2, Noise Control, Burbank Municipal Code), Section 21-208	Sets permissible project-related increase of five dBA above ambient noise base levels by land use and zone (residential, commercial and other uses).	Sections 5.12.1.3 and 5.12.2.

**TABLE 5.2.7**  
**(CONTINUED)**

<b>LORS</b>	<b>Applicability</b>	<b>Conformance (Section)</b>
COB Noise Ordinance, Section 21-208	Specifies exterior noise standards for residential land uses and zone by time of day; 10:00 p.m. to 7:00 a.m. (nighttime), 45 dBA for noises having a duration of 30 minutes or more in any one-hour period. From 7:00 a.m. to 10:00 p.m. (daytime), 55 dBA. If the location is on the boundary between two different land use classifications, the noise limit applicable to the more restrictive land use shall apply.	Sections 5.12.1.3 and 5.12.2.
COB Noise Ordinance, Section 21-208	Specifies exterior noise standard for commercial zoned land use; 65 dBA for noises occurring anytime, having a duration of 30 minutes or more in any one-hour period. For other land use zones the exterior noise standard is 70 dBA anytime.	Sections 5.12.1.3 and 5.12.2.
COB Noise Ordinance, Section 21-223	Prohibits the creation of any loud, unusual or unnecessary noise. Any device or equipment producing highly tonal in nature or otherwise distinct could be considered as being in violation of the city's noise ordinance.	Section 5.12.2.1.
COB General Plan, VI Noise Element	The impact of construction noise occurring during the daytime is considered minimal when the duration is no more than two or three months.	N/A

The U.S. Environmental Protection Agency (EPA) has not promulgated standards or regulations for environmental noise generated by power plants. However, the EPA has published a guideline (EPA Levels Document, Report No. 556/9-74-664) containing recommendations for noise levels affecting residential land use of  $L_{dn}$  55 dBA for outdoors and  $L_{dn}$  45 dBA for indoors. The agency is careful to stress that the recommendations contain a factor of safety and do not consider technical or economic feasibility issues, and therefore should not be construed as standards or regulations.

#### **5.12.4.2 State of California**

CEC regulations regarding noise, new-source noise impacts at residential/recreational receptors are evaluated with respect to the increase over pre-existing background noise levels. The CEC defines the area potentially impacted by the project as that area where there will be an increase above existing ambient noise levels of five dBA or more during either construction or operation.

The Cal/OSHA standard (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Section 5095) requires that all in-plant noise levels be limited to 85 dBA at three feet from equipment sources to protect worker safety. If areas of the plant exceed 85 dBA then all aspects of the hearing conservation program must be implemented by the employer.

There are likely to be areas within the plant with noise levels above 85 dBA, but none of them can be considered a normal stationary eight hour working station. Full-time operations and maintenance personnel will have only limited exposure to these high noise areas under most circumstances. In areas where 85 dBA is typically exceeded, signs will be posted requiring the use of hearing protection. Additionally hearing conservation programs must be implemented.

The state also requires local jurisdictions (CCR 65302F) to prepare General Plans that include Land Use and Noise Elements.

#### **5.12.4.3 Local Noise Regulations**

##### **City of Burbank.**

**Noise Element.** The COB is affected by noise from the Burbank-Glendale-Pasadena airport, surface transportation (including major arterials, freeways and rail traffic) and from local industrial operations. Many locations throughout the city are exposed to noise levels in excess of accepted standards. The COB's objective is to exert influence and authority whenever possible to reduce noise levels at sensitive receptors. The noise element considers that exterior noise exposures at residential locations should not exceed an  $L_{dn}$  of 60 dBA, but also recognizes that many areas in the city are above this level.

**Noise Ordinance.** The project is governed by the COB Noise Ordinance. Project noise at the plant site boundaries must comply with the Noise Ordinance guidelines established for residential, commercial and industrial land uses.

The COB's Noise Ordinance (Section 21, Article 2. Noise Control, Burbank Municipal Code) limits noise from an individual source by restricting the amount to which that source increases the ambient noise level at any other property. Under Division 2, Special Noise Sources, the COB's Noise Ordinance permits an increase of up to five decibels above the ambient base level for residential zones, commercial and other zones (Section 21-208). Even if the measured ambient noise level is higher than the base noise level it is the base noise level that applies. These levels are as follows:

Base Levels	Time	Zone
45 dBA	nighttime	Residential
55 dBA	daytime	Residential
65 dBA	anytime	Commercial
70 dBA	anytime	all other zones.

Also of note is Section 21-223, “Noise Sources Not Specifically Covered.” Section 21-223 prohibits the creation of any loud, unusual, or unnecessary noise that disturbs the peace or quiet of any neighborhood or creates annoyance or discomfort to any reasonable person of normal sensibilities residing in the area. Thus, any device or piece of equipment producing noise that is highly tonal in nature or otherwise clearly distinct from the ambient noise environment could be considered as being in violation of the COB’s Noise Ordinance.

Section 21-209 of the Noise Ordinance states that noise from construction activities is prohibited during the nighttime (10:00 p.m. to 7:00 a.m.) in a residential zone of the COB or within a radius of 500 feet from any residential zone. If necessity is shown, a permit can be obtained from the Superintendent of the Building Department of the COB to perform construction activities during the nighttime, stating the predetermined hours and days when the work is to be performed.

### 5.12.5 References

American National Standards. 1983.

Beraneek, L.L. and I.L. Ver, eds. 1992. *Noise and Vibration Control Engineering*. John Wiley & Sons, Inc. New York, NY.

Black and Veatch. 2001. Magnolia Power Project Equipment Noise Emissions.

California Energy Commission. 1997. Rules of Practice and Procedure, Power Plant Site Certification Regulations.

California Occupational Safety and Health Association. ND. Guidelines for Worker Noise Exposure.

City of Burbank. ND. Burbank Municipal Code, Section 21 Environmental Protection – Article 2. Noise Control.

1992. Burbank General Plan, Section VI - Noise Element.

EEI. 1983. *Electric Power Plant Environmental Noise Guide*. 2nd Edition Revised.

Harris, Cyril M. 1979. *Handbook of Noise Control*. 2nd Edition, McGraw-Hill, Inc. New York.

International Electrotechnical Commission. ND. Publications 804 and 651.

Occupational Safety and Health Act. ND. Guidelines for Worker Noise Exposure

U.S. Environmental Protection Agency. 1971, *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*. (Prepared under contract by Bolt, et.al., Bolt, Beranek & Newman, Boston, MA). Washington, DC.







